

Home Computing WEEKLY

As Regular Specialised Publications

More software reviews than any other weekly magazine

No. 48
Jan 24-30, 1984

40p

Software reviews for:
Commodore 64,
BBC, VIC-20,
Texas, Dragon,
Spectrum

New micros from Commodore: full details



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FREEZ' BEES

PICTURE PUZZLES

MIKRO

Star Trek

RAPEDES

Software while you wait

Cartridge software is the price of a feature not to be in the shops next month, bringing our prices and a help to piracy.

If successful, it could mean a big shake-up in the way software is now distributed on cassette, cartridge and disc.

Readers will each have a terminal, based on IBM's Personal Computer, to load blank cartridges with the customer's choice of 400 programs — while he waits.

Each terminal will be linked to a host IBM PC which will download new titles to a hard disc via telephone lines and take care of invoicing and royalty payments.

Continued on page 3

Sinclair in profits talks

Nuclear Research took a total of 400 phoned orders for the new CPX QL micro in the two days after its launch.

The news will interest big City investors, reported to be unhappy about disappointing half-year results.

According to one commentator, there would do well to go above last year's £14m.

They sought reassurance — and that led to a 30-minute breakfast news meeting behind closed doors last Thursday week.

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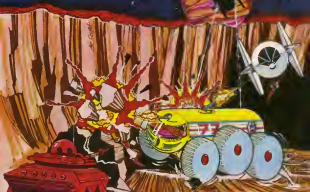
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After sales
shock

I've been with the intention of making other Commodore users aware of the attitude of that company with regard to after sales service.

In July 1983 I was purchasing all available software. I purchased a VIC-20 plus floppy disk plus 10K RAMpac from a local supplier and was completely satisfied in the evening months having a large amount of software and adding a 128K printer as well.

However, in October 1983, a fault developed in the RAMpac and I took it to the local supplier requesting repair of same. I was told that when returned then an even while had cost 400 less than 15 months previously, was beyond repair.

Thinking I had probably just been unlucky with my personal supplier, I wrote to Commodore themselves giving a complete history and asking for their advice.

I was a while for them to reply and I was somewhat disappointed as to their opinion. I should purchase a replacement using any as full as nothing could be done regarding the original as the guarantee or personal has elapsed.

They did however mention that they were not aware that a normally durable item should have failed so early in its life.

I have written again to Commodore asking the advice that it can get into a reply, and I therefore ask that you point the matter of my experience with what must now be considered a thousand other products I'm either purchasing or using.

I have contacted a replacement 10K RAMpac to enable the use of VIC-20s but, needless to say, it is not from the Commodore of the past and will surely be the last of R. S. Williams, Mylroth Traffic, Mid Glamorgan.

John Taylor, for Commodore and I disagree as to their opinion. Commodore can do exactly the same as I have done, because their computers can't be repaired. I am not able though there are exceptions to the rule, you, the computer, have been repaired to Commodore as usual.

Home Computing WEEKLY

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Is An URBAN UPSTART Are You?

RECENTLY INTRODUCED SOFTWARE

Two spare games with a different style this time. There's a Spectrum listing on page 13 and one for the BBC, starting on page 29.



More commands for your Commodore 64, including many on-line text, graphics and sound. Just type in the listing which starts on page 17.



Arcade games, adventures, utilities, educational programs... they're all reviewed in Home Computing Weekly, the magazine that reviews more software than any other weekly.



Find out about the new Commodore computers in our next page.

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While you wait

From front page

The system, called Ramon, is being supported by Prime Technology from America, where 500 terminals are already in use.

Managing director Neil Denton said once computer users had bought their first programs, re-loading the cartridge would cost as little as £2 a time.

At first Ramon, which has data for 30 different cartridge types, would offer software for Atari computers and games players, VIC-20, Commodore 64, TI-99/4A and IBM PC. Cartridges for Sinclair's Spectrum and QL and for the new computers using the MSX standard would follow.

The first 30 terminals, to be installed in High Street chess rooms, would offer 300 titles, almost all from America.

He said Prime was approaching UK software houses for their titles and planned to have 300 terminals installed by next Christmas.

By then he expected to have done 100,000 of business with the Ramon system.

Customers will be able to browse through a catalogue and see their choice on the terminal, before having it loaded onto a cartridge suitable for their machine.

It also means that programs can be copied without loss of copyright.

Mr Denton said the advantages of rental included not having to keep stocks of anything except blank, current tape, individual £1,250, Edge Computer Programmeable Cartridges.

These titles could also be imported and copied via a serial link line of ten.

Mr Denton said he believed that in America would be released in the same way as films. First, new titles would go on sale through Ramon, followed by cassette, cassette or disc and then through a specialist Micro-mag 800, which Prime runs with British Telecom.

Prime has also brought out two robots — with wonder to follow — which can be controlled via computer keyboard or joystick and made to trundle around and "speak" as well as other functions.

FREEP (Friendly Electronic Personal Robot), which will cost about £200, stands 12in high and has computer on floor-rollable top, actuated by a portable or a red controller, supplied, or computer keyboard or joystick.

It can move as fast as a second said, using a pen attachment, can be made to copy the screen onto paper.

There is a 40-word vocabulary, expandable, and power comes either from standard batteries or optional rechargeable pack. **FREEP** is due on sale in April.

TOTO, controlled in the same way, is over 20 in tall and will cost about £1,500 when a portable tape unit is added.

Text is sent from the computer keyboard to **TOTO**'s speech system and, says Prime, can say virtually anything as well as storing the information.

It can be "taught" to move around, on two independently-driven wheels at 30 per second, and can then repeat the movements. The on-board battery runs for three hours before re-charging.

ROCK X-A, priced at about the same as **TOTO**, will be on sale in March-April, offering variations on the **TOTO** features.

Prime says the software for **TOTO** and **FREEP** is at present available for the Apple II.

Software for BBC, Commodore 64 and Spectra are waiting to be written and programs for other popular machines would be worked on next year.

Prime also planned to design its own peripherals, both sensory and manipulatory.

Known as **Androbot**, and imported from America, Prime says the robots can be used in education, for business promotion and for entertainment.

They prefer Prime applications will include security and intruder detection, fire and smoke detection, vacuuming and lawn mowing, helping invalids and for control applications.

• Prime is launching a £1,000 portable business computer, called the **Wren**, which includes four software packages and a built-in auto-dial modem.

Designed by Prime and Transcom and made by Thors (SM) Data, Inc., it has 64K of RAM, 1M video RAM and two 5¼in disc drives.

Prime, 35-39 Abchurch Lane, London EC4N 3AT.



FREEP — 12in high and moves at 30 in per second



TOTO costs £1,500 and can be "taught" to repeat a series of instructions

Sinclair profits



The new QL computer — aimed at businesses and schools users

From front page

About 40 representatives of big City institutions, like pension funds, heard from the Chief Executive and managing director Nigel Searle shortly before the QL's official launch.

Most of them women were apparently alerted, but the prospect of Sinclair Research becoming a public company this year is now seen as in doubt.

Supply problems, price cuts by other computer makers and cost increases have led to the loss.

Half-year figures to the end of October showed that the previous year's 85 per cent growth would not be repeated.

Sales were up by 60 per cent, to £37m from £23m, but unit costs by 45 per cent. So pre-tax profits were £4.4m against £3.8m — slightly lower than before when tax

Optimists among analysts predicted that year profits of £14,025,000, perhaps lower.

For Clive Sinclair, who will own most of Sinclair Research, because a paper on its disclosure last year when a small number of shares were sold at £24 a time, valuing the company at £100m.

The hope is that QL will be produced in sufficient quantity to hit sales targets and that the new pocket-sized TV will together boost growth.

Sinclair Research, Stanbury Rd, Cambridge, Surrey

Sorry!

Our apologies for the paper quality of last week's issue — it wasn't our fault! As you can see, we're back to the top quality coated paper you have come to expect from us.

Commodore's new micros: the details

Commodore will soon decide on its next home computers for the UK from a range just presented in America.

First, machines from the models being assessed.

Theoretically, the choice can be made from six different models, made up of three keyboard styles and two memory sizes, 128 or 64K of RAM. Each has the option of built-in software ROM.

Two factors narrow the choice.

Commodore's UK marketing director, John Baxter, has already said he does not want a "toy" keyboard. And a 128 model is certainly in today's market.

So Commodore will probably show two final models at the Hannover show in April, both with 64K of RAM, 128 of which would be suitable for BASIC programs.

One will have 47 typewriter-style keys, including four programmed and reprogrammable function keys and four cursor keys. These are arranged in a diamond and shaped to success.

The second model will have an additional 19 key numeric key pad to the right and store ROM to handle speech.

In a break with tradition, the new models will not be language-compatible with earlier models. There will be a new BASIC 1.5, offering more than 35 commands, and the 7501 processor, with 48 to 1.5Mbit clock.

This processor is an enhanced version of the 6502, used in the Commodore 64, which at first was a development from the 6501.

The advantage of the 7501 is that it can handle up to 128K of ROM, but uses the same 6502 instruction set.

One observer who was at the Las Vegas Consumer Electronics Show where the prototypes were presented said, however, that they did not have the 64's sports handling or sound features with just two-cost processors.

So far, Commodore has said that users will be able to choose one of three built-in ROMs:

- **Maple Data**, for home calculations and filing
- **Word Processor**, with calculations features
- **3 PLUS-1**, for "business" users, which includes spreadsheets, word processors, file managers and graphics

These, and future releases, will also be available on cartridge.

Both computers are cheap at first. One is 139.95 in the US, high and 159.95 in the UK, but neither is as wide as 1615s, because of the numeric keypad, 25 pin high and 25 pin deep.

These are the features which both models share.

Screen: 320 by 200 pixels in high resolution — using 128K of RAM — 40 columns by 25 lines (not with eight-screen handling/handle both Upper and lower case, 128 colours — 16 colours simulated by eight luminance levels — colour and flashing, PET graphics characteristics.

Sound: two tone generators or just 6502 and one where more generator, and eight levels of volume.

Input/output: user port — narrower than the 64's — serial port, ROM cartridge and parallel disc drive ports, two printer ports, cassette interface, RS output, monitor, video input/output, power supply.

The serial port is compatible with present Commodore products but it is possible that the



Commodore's C264 — with four wide function keys above the keyboard and arrow-shaped cursor keys set in a diamond shape

user port may be oriented for lack of room, according to a Commodore source.

There will be a new-style cassette deck, the 131, which will have a smaller DIN plug instead of the present edge connector.

And there will also be a new and faster 5 1/4 inch floppy disc drive made in Japan by Necotronics, a company jointly owned by Commodore and Matsushita. Production is expected to reach 50,000 a month by June. A dual drive follows.

Both models also have a high-resolution code memory with more than 12 commands.

Apart from the keyboard and slight design changes, the main difference between the two is that the more expensive model has 64K of RAM instead of 128K.

The additional 64K of handle speech — more than 250 words are included and more can be added with cartridges or discs.

The upper-range model is called the C264. The low-end figure includes RAM too, the figure 2 denotes the extended keyboard and the 4 is for the speech capability.

For the same reason, the other model has the code C264. If Commodore chose so, it could produce a model C262 which would have a "toy" keyboard and 128K of RAM.

No UK launch date has been decided but, with final models

shown in April, summer is the most likely time for delivery in bulk.

Among the BASIC commands in the new models, all new to Commodore are:

- BOX** for graphics
- CHG** for
- CHG** for
- DO WHILE**
- DO UNTIL**
- IF** for
- PRINT** error trapping
- SET KEY** with user key pressed
- UNAPP** select graphics mode
- UNAPP** select graphics
- USER** string handling
- USER**
- KEY** defines function key
- KEY** for
- PAINT**
- PRINT USING** text formatting
- PRINT** driver format for drive
- LOC** of RAM
- RECALL**
- RESUME** data statement
- trailing**
- FOR**
- RECALL** both graphics commands
- RECALL**
- RECALL** similar to envelope
- TRAP** error handling
- TRAP**
- TRAPP**
- YOL**

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What's new at the big Las Vegas show

Our man in America, Bud Izen, reports on what he found at the Consumer Electronics Show

The first and most lasting impression that hits you as you enter is the sheer size of this show—nearly 30 American Football fields (each about 30 yards by 100 yards) filled with the latest electronic gadgets. That is roughly the floor size.

What is even more amazing is that this is a trade show, it is not open to the general public. This year about 93,000 people attended during the four days.

There is virtually no way to see everything. In addition to the floor space at the convention center itself, the convention areas of three other major hotels were also utilized.

Of primary interest to many were sales figures and forecasts for 1983 and 1984. The Electronic Industries Association keeps careful statistics on virtually every aspect of the industry.

Your total sales to dealers in thousands of units: Factory Sales or Shipments

Home Computers

1981	2,000	1,800
1982	4,000	1,850
1984 (proj)	8,000	2,750

Home computer software

1981	n/a	250
1982	18,000	1,200
1984 (proj)	38,000	2,300

Programmable video games

1981	1,200	850
1982	6,400	760
1984 (proj)	5,000	450

Video game cartridges

1981	40,000	1,500
1982	75,000	1,400
1984 (proj)	74,000	1,500

Market Penetration (% of houses) at the end of 1982

Programmable video games	21 per cent
Home computers	7 per cent

It is amazing to see how much dollar volume is being generated by an industry which has so far only penetrated into seven per cent of all American homes! Home computers and related software are now selling more and generating more dollars than video game machines which have been around longer and are in three times the number of homes. This seems to clearly indicate that lots of people are getting tired of doing nothing but playing games. About time too.

Something else that was about to come is a new television program that was just announced in the show. Called The New Tech Times, it will be aired weekly on the Public Broadcasting System, our only firm of viewer-sponsored commercial-free TV.

The focus and purpose of the program will be to give consumers a way to handle their

problems with new technology. Viewers will be able to "talk back" to their sets, using a modem and the Compuserve bulletin board system.



• The sleek-looking software in the best parking

The first man was, of course, the Coloco Adams, who reported an economy and optimism that seemed genuine. They obviously really believe in the product and also firmly believe that the problems that occurred when the first run of machines were released has been corrected. They also admitted that the problems (bug, in some of the software, quality control and documentation problems) did exist, which is refreshing coming from an industry that usually consists of making other than completely perfect products, even though we all know otherwise. I saw the new documentation, and it does seem simple and clear.

The machines are now rolling off the assembly line in New York, although they expect demand will exceed supply for a considerable time. So much so that more America's largest studios, The Stern Studio, will be hard pressed to fill orders in less than three months.

Sol Davidson, U.S. general manager of Commodore, said his company was not worried about the Adams withdrawal. As far as he was concerned, the Commodore boards was (metaphorically)

speaking the only booth at the show. Contrary to rumors, Commodore had no plans to market a competitive package nor to reduce prices merely because of the Adams or any other computer. He felt Commodore was mid-way content, meaning that they felt highly committed to their users and did not wish to dispute to them.

He objected to the concept of a factory-direct model, arguing that it looks out merely by definition. He said that one of the main design concepts of Commodore machines is that they are customized to their personal applications; thus, always and able to completely design their own systems for their own specific purposes.

One of the more volatile and impressive of all the Apple victims will probably be coming close very soon. Called the Laser 8000, it is made by Video Technology, of Hong Kong, and is expected to retail for about \$6000 (and its equivalent in pounds in the U.K. is about £6000 per unit, considerable more than Apple's software).

The company has not stolen any proprietary features from Apple, so it will not run any software that makes direct ROM monitor calls.



• John Eyles and Carl Ziegler from QuickSilva — also accounts

The product itself looks very good, and we are hoping during a number of upcoming things. It runs at twice the clock speed of the Apple II, can support up to 128K RAM through bank switching, will address most to many ports in products made in the Apple (III) by 1983, comes with a built-in parallel printer port, includes both 40 and 80 column display, has an 81 key full-stroke keyboard with a nice feel, has a separate numeric keypad, includes eight user-defined function keys, will generate five separate sound channels, will support virtually every Apple add-on or its equivalent as available from Video Technology (modems, data acoustic modems, printers, floppy disk, Z80 card, 128K card, light pen, camera, scanner, and VGA monitor to name but a few).

It will absolutely support every language that the Apple II can, and every major software package that the Apple II can run. I was definitely impressed.

Itan obviously needs no introduction to you, it was certainly getting a very professional introduction to us, although I think they might have made a slight marketing error by using an American video card rather than an English one behind their video presentation.

Everyone over here seems to love the foreign export, and especially ones with British accents.

I did find a odd that Itan was not planning to announce the machine until next October? It seems strange to debut a machine so early.

Another name that will sound familiar to you is Quiksilver. This was an first CES, and got in on both, another firm controlled our first Mike Eyles and Carl Ziegler who said they were getting a very strong response, with lots of dealer inquiries.

On closer there were a few bugs, and I did go back to meet our from Learning Software. I cannot tell you much about their products as they do not plan to market in the U.K. However, that bug was very new.

There were lots of magazines present. Both with a new booth I was especially interested in the software that Playboy brought to demonstrate. Unfortunately, they would not let me take her home for a review.

I would like to shortly opening the presence of Asia Sales, Donald Davidson, a computer that made to a conference at the show.

"We must search for meaningful applications of microprocessor technology as the basis. We are in the microprocessor business and we want to help people's



is a big from Learning Center

lives by offering opportunities for learning and self improvement.

"In fact, aside from word processing, there are few truly useful applications for home computers. Let's face it you can balance your checkbook with a calculator and you can store your recipes as a book in the kitchen.

"We've got to make consumers say 'Gosh, I didn't know a computer could do that' and 'I want one'.

"What I am telling you is that it is not enough for manufacturers to merely offer more computer memory to consumers. Most consumers have more power than they know what to do with already. And it is not enough for vendors to compete on price alone.

"In fact, that is a disservice to consumers because consumers should be made aware of what the computer can do for them. Who are we kidding if the consumer buys a cheap computer and winds up using it as an electronic paperweight or doorstop?

"Maybe we can learn something from Detroit. In the old days, car buyers were also persuaded with horsepower and other values of the engine. But nowadays, most people are

interested in features and gas mileage. We've got to get that point to our industry."

All those points are well taken. You may or may not agree, depending upon where you are coming from. One thing is for sure, almost half of the all consumers who purchase a computer costs less than \$1000 will not be using a less than six months later.

And I for one think that is a real shame. For what?

The shame was great. Perhaps next year we'll see software wars instead of hardware wars. I hope so.

See you next year at the show, and in my U.S. Source column.



David Davidson, U.K. General Manager of Commodore, a more man



is a friendly face — Margaret Burton from Elan



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Welcome

From numerous points around and about
Alameda, the view looks like this:

2000-2002: expansion continued
2003-2008: slow expansion, 2008-2010

```

233: T=10
234: PORE 53240,X
235: PORE 752,1
236: B=H01H0000000
237: POSITION 0,0,2317 " "
238: IF PORE0 532520=4 THEN GOTO 1000
239: GOTO 250
1000: SOUND 0.00,0.151,SOUND 1.10,0.151,POR
B=0 TO 2550,PORE 710,44,PORE 712,44,HEAT 0
1010: SOUND 0.0,0.0,SOUND 1.0,0.0,GOTO 2
2000: GRAPHICS 150,COLOR 1,SETCOLOR 0,0,0
POSITION 4.517,0.0,0,0,0,0,0,0,0,0,0,0,0
0,4.717,0.0,0,0,0,0,0,0,0,0,0,0,0
3000: L=20,RESTORE 3000
3002: B=0
3010: READ CH,LD
3112: IF CH=000 THEN RESTORE 3000:B=0+1.0
GOTO 3000
3020: SOUND CH,0.10,0.0
3030: FOR B=1 TO 0,INEXT B
3070: IF B=2 THEN RETURN
3080: GOTO 3000
3090: DATA 0.01,0.1,0.02,0.2,1.20,4.0,53.0,0
3090: DATA 1.173,0.2,1.21,4.0,0.00,2.0,0.04,1.
0,7.2,1
3090: DATA 0.00,0.1,0.02,0.2,1.20,4.0,53.0,0
3090: DATA 1.173,0.2,1.21,4.0,0.00,2.0,0.04,1.
0,7.2,1
3090: DATA 0.00,0.1,0.02,0.2,1.20,4.0,53.0,0
3090: DATA 1.173,0.2,1.21,4.0,0.00,2.0,0.04,1.
0,7.2,1
3110: DATA 0.72,0.1,0.02,0.2,1.04,0.1,173.0

```



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COMPUTER
NAME

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[illegible]

REINFORCED CONCRETE FRAMEWORK
 1950-1951

for handling records of 1987. Nevertheless, these records provide a first impression that large numbers of immigrants are still coming to the United States. The National Health and Medical Research Council (NH&MRC) also reports that the number of immigrants of non-white ethnicity is growing at a rapid rate. These records also indicate that the number of immigrants is growing.

ABOUT THE AUTHOR



Task	Time	Score	Progress
1. [Task Name]	00:00:00	0/100	0%
2. [Task Name]	00:00:00	0/100	0%
3. [Task Name]	00:00:00	0/100	0%
4. [Task Name]	00:00:00	0/100	0%
5. [Task Name]	00:00:00	0/100	0%
6. [Task Name]	00:00:00	0/100	0%
7. [Task Name]	00:00:00	0/100	0%
8. [Task Name]	00:00:00	0/100	0%
9. [Task Name]	00:00:00	0/100	0%
10. [Task Name]	00:00:00	0/100	0%

EPSON COMMUNITY



1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	2031-2032	2032-2033	2033-2034	2034-2035	2035-2036	2036-2037	2037-2038	2038-2039	2039-2040	2040-2041	2041-2042	2042-2043	2043-2044	2044-2045	2045-2046	2046-2047	2047-2048	2048-2049	2049-2050	2050-2051	2051-2052	2052-2053	2053-2054	2054-2055	2055-2056	2056-2057	2057-2058	2058-2059	2059-2060	2060-2061	2061-2062	2062-2063	2063-2064	2064-2065	2065-2066	2066-2067	2067-2068	2068-2069	2069-2070	2070-2071	2071-2072	2072-2073	2073-2074	2074-2075	2075-2076	2076-2077	2077-2078	2078-2079	2079-2080	2080-2081	2081-2082	2082-2083	2083-2084	2084-2085	2085-2086	2086-2087	2087-2088	2088-2089	2089-2090	2090-2091	2091-2092	2092-2093	2093-2094	2094-2095	2095-2096	2096-2097	2097-2098	2098-2099	2099-2100	2100-2101	2101-2102	2102-2103	2103-2104	2104-2105	2105-2106	2106-2107	2107-2108	2108-2109	2109-2110	2110-2111	2111-2112	2112-2113	2113-2114	2114-2115	2115-2116	2116-2117	2117-2118	2118-2119	2119-2120	2120-2121	2121-2122	2122-2123	2123-2124	2124-2125	2125-2126	2126-2127	2127-2128	2128-2129	2129-2130	2130-2131	2131-2132	2132-2133	2133-2134	2134-2135	2135-2136	2136-2137	2137-2138	2138-2139	2139-2140	2140-2141	2141-2142	2142-2143	2143-2144	2144-2145	2145-2146	2146-2147	2147-2148	2148-2149	2149-2150	2150-2151	2151-2152	2152-2153	2153-2154	2154-2155	2155-2156	2156-2157	2157-2158	2158-2159	2159-2160	2160-2161	2161-2162	2162-2163	2163-2164	2164-2165	2165-2166	2166-2167	2167-2168	2168-2169	2169-2170	2170-2171	2171-2172	2172-2173	2173-2174	2174-2175	2175-2176	2176-2177	2177-2178	2178-2179	2179-2180	2180-2181	2181-2182	2182-2183	2183-2184	2184-2185	2185-2186	2186-2187	2187-2188	2188-2189	2189-2190	2190-2191	2191-2192	2192-2193	2193-2194	2194-2195	2195-2196	2196-2197	2197-2198	2198-2199	2199-2200	2200-2201	2201-2202	2202-2203	2203-2204	2204-2205	2205-2206	2206-2207	2207-2208	2208-2209	2209-2210	2210-2211	2211-2212	2212-2213	2213-2214	<
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1. **THE COMPANY** shall be a company limited by guarantee and shall have the name "The [Name] Foundation" (the "Company") and shall be incorporated in England and Wales.

Trans Instruments Listed



1. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 2. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 3. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 4. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 5. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 6. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 7. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 8. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 9. *Journal of Management Studies*, 1997, 34, 1, 1-15.
 10. *Journal of Management Studies*, 1997, 34, 1, 1-15.

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Dozens of great games from Abrasco are on offer in this week's spot the difference competition.

Serious prize packages are waiting to be won by owners of three computers: VIC 20, Spectrum and Commodore 64.

That's a total of £1,000-worth of prizes and each winner will get two tapes.

And all you have to do is find the differences between our two seascapes.

The prizes

Each of our 70 winners will receive two tapes, worth about £14.00, chosen by Abrasco (not on tape).

VIC 20 owners will get one of the following:

Vigglebit	Py Superior
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Double Trouble	Double Trouble
Double Trouble	Double Trouble

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Gold	Post
Gold	Post
Gold	Post

And our winners who own Commodore 64 will be able to tape from three tapes:

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Double Trouble
The winners' names and the prizes will be published in Home Computing Weekly.

How to enter

Study the two seascapes — there are a number of differences between them.

Circle the differences on cartoon A and then fill in your name, address and the name of one of the three computers (at a high or low selling price). VIC 20, Commodore 64 or Spectrum.

70 chances to win great games from ABRASCO

Enter our Spot the Difference competition and you stand a chance of winning a share of £1,000-worth of Abrasco software. The prizes are for the VIC-20, Commodore 64 and Spectrum

Send the coupon and cartoon B on an envelope and wear clearly on the back, all the differences you found.

Post your entry to Abrasco competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3LH.

Entries close in first post on February 10.

You may enter as many times as you wish but each entry must be on the official coupon — not a photocopy — and sealed in a separate envelope.

The winners will be the first 70 correct, no ties allowed, regardless of prize claims.



The prizes will arrive from Abrasco within 28 days of the publication of the names containing the names of the winners.

Important — please follow carefully the guidelines in entering — incomplete coupons and entries on envelopes with no number on the back will not be considered.

The rules

The first 70 correct entries appear after the closing date (February 10, 1984) will win the prizes. Coupons which are not fully completed and envelopes without the number of differences found on the coupon will be discarded.

Entries will not be accepted from employees of Abrasco (Specialist Publications), Abrasco and Home Computing Weekly. Two winners may appear in any category. Number and name of the computer.

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Acceptance of rules — I agree with a prize of £1,000-worth of Abrasco software. Home Computing Weekly, No. 1 Golden Square, London W1R 3LH. I agree to give my name and address to the publisher of this magazine. I agree to give my name and address to the publisher of this magazine.



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Just type in this listing for many more commands on your Commodore 64 — all say to store from BASIC.

To run each command, F10 is still good, but variables are used directly in the command (they must be integer values).

Also, to make the commands easier to recognise, each is given a variable name similar to its own name — be careful not to run these variables in a program.

Unfortunately, some issues have had to be discarded because of their similarity to other commands. As POINT commands are discarded to PO, for example.

As each part runs, take care when entering the code and SAVE the program before you use any part of it.

The diagrams also act as a rough guide, indicating the code numbers of each section and showing if space are missing by an incorrect total.

You can then use the demonstration program, showing the variability of some of the commands.

Although this week's part works on its own, you cannot see POINT, LINE, CLO or MUSH clear if you missed last week's issue.

The "manual" which follows is brief, but it does give clear details of every command as well as some more detailed information.

Notes: Modes 4 and 5 use the second 16K block of memory, so sprite graphics must be POled to 16K and above, and registers normally at 2040 are moved to 2000.

Next week: Advanced demonstration programs, including a 700-line screen and a map of the British Isles.

The commands

MODE

Allows easy change to graphics modes. The screen will only be cleared if you want it to be.

Format: MODE = 3128
SYSMODE,A,B,C

Notes

Value	Classification	Resolution	Text
0	hi-res screen 0	320 x 200	32-column
1	hi-res screen 0	320 x 200	64/A
2	extended colour medium-res	40 x 25	40 x 25
3	hi-res screen 1	640 x 200	64/A
4	hi-res screen 1	320 x 200	32-column
5	hi-res screen 1	320 x 200	64/A
6	normal graphics normal res	80 x 50	40 x 25
7	normal graphics user-defined	80 x 50	40 x 25
8	user-defined graphics	40 x 25 +	default

Extend your 64 to do a lot more

Make text, sprites and sound more flexible with part two of David Rees' Extended BASIC for the Commodore 64. You can use this week's listing even if you missed part one

0 or 1 Which screen is cleared

0 or 1 Does this screen is cleared

GOOL

Change graphics colour.

Format: GOOL = 1170
SYSOOL,A,B

Notes

0,1,2 is colour choice (0, 0=off or multicolour)

4=on colour

5=on colour

6=background colour

7,8,9 Colours 1,2,3 for EGM and multicolour modes

10,11 Sprites multicolours 1 and 2
12 to 19 individual sprite colours
In the colour palette these registers (0-19)

POINT

Draws a point in modes 0,1,4,5

Format: PO = 3134
SYSPO,A,X,Y

A is the sprite's work bit performs a separate job

the number	if off	if on
0	Screen 0	Screen 1

drawn to

1 Plot on normal

2 Upright ExclusiveOR

X,Y plot position (0-255 always)
Plot colour is specified by SYSOOL,A,X,Y

MOVE

For each line, moves plotting position.

Format: OMOVE = 3209
SYSOMOVE,X,Y

X,Y is the plot position

LINE

Draws a line from last plotting position in modes 0,4

Format: LINE = 3154
SYSLINE,A,X,Y

For variable definition see POINT

UPPOINT

Draws a point as text modes 1,4,5 (mode 0/1 graphics are defined)

Format: TPO = 3130

SYS TPO,A,X,Y

A (0 or 1) normal or ExclusiveOR

X,Y plot position.

Plots as text modes in an 80 x 50 resolution, but for compatibility it uses a 128 x 200 number grid

CLG

Format: CLO = 3131
SYS CLO,A

Clears graphics screen drawn by A (0 or 1)

XTENT

Modes 0 and 4

From our specified character given by a number (see Commodore Manual, p132 for characters) it may be upper or lower case, graphics or normal text and single or double height. Back background and foreground colours may be independently defined. It may be combined with bytes graphics, giving more than full TTY text effects.

Format: XTENT = 3267
SYSXTENT,X,Y,A,B,C

X,Y plot position on a 40 x 25 grid

A colour, given by background colour + 16=on colour

B is 0=normal screen plotted to, 1=double height or double height text

C Character 0-255 gives graphics character set, 256-257 gives text character set.

CURSOR

Format: CURS = 3266
SYS CURS,X,Y

Similar to TAB(X,Y). Sets plotting position of the cursor relative to the top-left hand corner of the screen.

SPRITE

Format: SPRITE = 3264
SYS SPRITE,A,X,Y

Changes the position of sprite number N (0-7) to the position X,Y(0,199 max).

SETSPRITE

Format: SETSPRITE = 3268
SYS SETSPRITE,N,A,M,B,C,D,X,Y,P,Q

Defines value registers for sprites in the following way:

N sprite number (0-7)
A sprite on/off (0-1)
M speed on/off (0-1)
B,C,D defines multicolours 0,1,2 and 3 for all sprites (0-19)
X expand X on/off (0-1)
Y expand Y on/off (0-1)
P horizontal/vertical priority (0-1)
Q start of sprite graphics (0-199)

MUSC

Plays a constant musical note of independent volume. To cut the note, use zero volume or POLE the waveform register to zero.

Format: MUSC = 3261
SYS MUSC,S,W,Y,A,D,Q

S sound channel (0-2)
W waveform 16, 32, 64 or 128

COMMODORE 64 PROGRAMMING

V volume independent of other channels (0-15)
N note number (3-45) gives C to B (natural pitch)
O octave number (0-7)
D duration value used for later expressions

VOL =

Sets master volume V (range 0-15)

Format: VOL = SSSS
 SSSVV

FX

Performs a few odd useful functions

Format: FX = SSSS
 SSSFX,AAA

S =
 0 channel display column number (0-40/0-10)
 1 channel display row number (0-15/0-5)
 2 line scroll on screen X words (A=0-7)
 3 line scroll for screen Y words (A=0-7)
 4 A=0 blink screen, A=1 display
 5 sets master volume and filter mode (0-10)
 6 sets 100 speed 0 = cursor and 10000 (0-100) normally 40
 7 test repeat keys A=0 cursor only/40 no keys, 100 all keys

Reference sections
 Plotting rate in points per second (assumed only)
 PRINT = 100, LINE = 1000,
 EPOINT = 1000

New Memory Map

8 system variables

Listing 1 — Extended BASIC (part two). Use the CHECKSUM to make sure you have typed it in accurately

```

1 REM*****
2 REM:EXTENDED BAS.104
3 REM PART 2
4 REM:BY DAVID REES
5 REM*****
6 REM:TEXT,OPTICS
7 REM:AND SOUND
8 REM*****
9 A=5114 C=0
10 POS=INT(7000/POKE POKE+H.R C=C+5 NEXT
11 PRINT:READY:GOTO 140
12 PRINT"IT SHOULD BE 203077F"
13 A=2074256 C=0
14 FOR=INT(2000
40 READ POKE:NEXT A (A=C+8
50 NEXT
55 PRINT:READY:GOTO 140
56 PRINT"IT SHOULD BE 20077F"
58 DATA 175, 3241, 250, 34, 105, 2, 24
110 DATA 141, 201, 30, 10, 200, 163, 14, 100, 3
120 DATA 104, 30, 1, 50, 30, 4, 200, 105, 100
125 DATA 1, 100, 201, 240, 3, 70, 240, 100
130 DATA 105, 37, 50, 100, 100, 144, 3, 100, 1
135 DATA 100, 100, 30, 100, 100, 100, 100
140 DATA 107, 250, 104, 201, 163, 37, 201,
145 DATA 100, 1, 100, 201, 70, 41, 100, 201, 1
150 DATA 140, 247, 201, 2, 240, 77
155 DATA 102, 100, 1, 1, 100
160 DATA 4, 24, 100, 200, 201, 100, 200
165 DATA 103, 1, 100, 20, 100, 30, 37, 204
170 DATA 101, 1, 40, 6, 100, 201, 5, 20, 120, 200
175 DATA 10, 20, 24, 6, 204, 144, 100, 90
176 DATA 1, 1, 100, 200, 100, 30, 100, 20
177 DATA 10, 30, 204, 240, 3, 24, 100, 1, 24
178 DATA 103, 201, 90
180 DATA 10, 1, 100, 100, 200, 240, 1
185 DATA 10, 240, 100, 100, 200, 240, 240, 90
190 DATA 10, 1, 100, 100, 200, 240, 90
195 DATA 10, 240, 100, 200, 201, 41, 1
197 DATA 141, 101, 3, 100, 201, 41, 2, 240, 1
200 DATA 109, 1, 141, 100, 3, 100, 201, 40, 4
205 DATA 140, 2, 100, 1, 141, 100, 3, 100, 13, 200
210 DATA 140, 10, 170, 16, 200, 140, 20, 1
215 DATA 107, 17, 200, 141, 11, 3, 173, 14, 200
220 DATA 141, 102, 3, 173, 20, 200, 141, 20, 1

```

1024 screen and colour for screen screen 0

2040 BASIC RAM

1024 to 1023 screen 0, contains to 1023.

1024 user-defined characters

1024 to 1023 screen 1

1024 to 1023 screen 1 colour, to 2073

2040 BASIC ROM

4000 Extended BASIC code to 1023

Command Input

SVS to machine code. Language indicated by appropriately named variable (ab) according to saved by use of only the first 3 letters of the variable. Further values read by separate routine. This will read both variables and numbers, but will not evaluate expressions. Only integer values can be used.

Error Calls

"Illegal Quantity" if a value is not all digits
 "Syntax Error" if too many or too few values come after the command, if a command does not follow the command, or if an error occurs.

```

225 DATA 175, 3241, 250, 34, 105, 2, 240
230 DATA 105, 250, 240, 3, 70, 163, 151
235 DATA 141, 201, 30, 140, 3, 141, 17, 200
240 DATA 105, 250, 141, 63, 3, 141, 92, 3
245 DATA 141, 10, 200, 100, 2, 200, 100, 200
250 DATA 100, 200
255 DATA 105, 250, 200, 200, 200, 163, 201
260 DATA 141, 10, 3, 141, 54, 3, 141, 16, 200
265 DATA 177, 10, 200, 240, 10, 201, 240, 9
270 DATA 101, 1, 340, 5, 201, 5, 240, 1, 90
275 DATA 175, 2, 240, 240, 10, 100
280 DATA 140, 20, 200, 201, 2, 240, 3, 70, 100, 200
285 DATA 105, 1, 70, 100, 104
290 DATA 110, 200, 100, 201, 41, 1
295 DATA 141, 99, 3, 173, 20, 200, 141, 54, 3
300 DATA 10, 3, 200, 100, 100, 240, 1, 90
305 DATA 140, 201, 34, 100, 2, 100, 104, 34
310 DATA 100, 250, 100, 24, 141, 62, 3, 90
315 DATA 100, 100, 144, 1, 24, 90, 32, 3, 200
320 DATA 140, 20, 140, 1, 90, 100, 200, 240, 1
325 DATA 100, 100, 201, 74, 24, 74, 24, 140, 50, 3
330 DATA 100, 220, 50, 144, 2, 24, 70
335 DATA 175, 10, 200, 201, 3, 240, 10, 200, 6

```

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340 DATA 140, 9, 200, 1, 240, 5, 201, 6, 240, 1
345 DATA 140, 173, 50, 3, 24, 74, 24, 140, 56, 3, 10
350 DATA 140, 141, 37, 3, 173, 50, 3, 50
355 DATA 100, 57, 3, 24, 141, 60, 3, 173, 50, 3
360 DATA 140, 74, 24, 141, 50, 3, 10, 24
365 DATA 141, 100, 3, 173, 50, 3, 50, 200, 50, 3
370 DATA 140, 24, 141, 61, 3, 24, 100, 60, 3
375 DATA 140, 100, 100, 3, 190, 240, 24, 10
380 DATA 140, 100, 100, 200, 240, 141, 60, 3
385 DATA 100, 4, 100, 200
390 DATA 175, 50, 3, 173, 50, 3, 100, 240, 10
395 DATA 140, 100, 40, 144, 3, 24, 200, 330, 100
400 DATA 100, 200, 240, 100, 201, 100, 100
405 DATA 177, 201, 217, 200, 240, 7, 200
410 DATA 100, 10, 200, 240, 100, 100
415 DATA 172, 50, 3, 100, 200, 6, 10, 60, 3
420 DATA 140, 144, 3, 77, 60, 3, 100, 100, 200
425 DATA 100, 140, 30, 100, 100, 200, 24
430 DATA 100, 100, 24, 100, 200, 173, 54, 3
435 DATA 140, 201, 70
440 DATA 100, 141, 22, 200, 70, 100, 200
445 DATA 100, 2, 173, 20, 200, 70, 100, 200
450 DATA 100, 100, 100, 201, 100, 2

```

COMPORE 64 PROGRAMMING

```

602 DATA23,119,200,165,251,165,2,96
603 DATA23,4,175,9,142,18,207,165,2
604 DATA141,21,207,96,24,201,1,200,4
605 DATA141,194,2,126,56,123,2,24
606 DATA151,1,56,233,15,163,2,4,96
607 DATA164,2,165,231,153,20,20,20
608 DATA15,159,200,173,121,43,252,3,2
609 DATA141,21,173,17,204,43,152
610 DATA141,17,200,173,22,200,41,239
611 DATA141,22,200,163,21,141,24,200
612 DATA145,251,56,232,9,144,4,24
613 DATA15,240,199,145,201,120,2
614 DATA22,2,200,165,251,43,1,141,101,2
615 DATA22,2,200,165,251,43,1,1,201
616 DATA240,3,52,215,194,125,2
617 DATA141,13,207,201,1,200,14,163,21
618 DATA141,1,4,200,173,17,200,3,22
619 DATA141,17,200,96,204,1,200,13
620 DATA173,22,200,9,16,141,13,163,24
621 DATA144,207,181,1,200,14,163,21
622 DATA141,24,200,173,17,200,9,24
623 DATA141,17,199,207,101,200,14
624 DATA163,18,141,24,200,17,22,200
625 DATA16,12,200,96,200,4
626 DATA200,24,163,120,141,14,200
627 DATA173,221,43,252,3,2,161,221
628 DATA173,17,200,9,20,141,17,200,96
629 DATA201,5,160,11,17,22,200,9,45
630 DATA141,22,200,24,164,21,200,2
631 DATA200,1,20,201,7,203,6,162,22
632 DATA141,24,200,26,163,21,141,24,200
633 DATA24
634 DATA2,8,200,165,253,200,11,234
635 DATA205,253,143,16,207,165,234
636 DATA141,17,200,16,2,200,165,253
637 DATA240,1,96,165,200,200,251
638 DATA165,251,141,13,207,96
639 DATA173,62,3,200,65,3,200,17
640 DATA173,61,3,200,64,3,200,9
641 DATA173,60,3,200,63,3,200,1,96
642 DATA173,62,3,56,233,200,144,11,24
643 DATA173,65,1,56,233,200,144,2,24,96
644 DATA173,60,3,200,24,173,63,3,200,19
645 DATA173,61,3,56,233,24,144,1,2,24
646 DATA173,64,3,56,233,24,144,2,24,96
647 DATA25,112,157
648 DATA23,119,200,165,251,41,1
649 DATA141,160,3,70,215,134
650 DATA23,119,200,165,251,41,7,24,88
651 DATA24,133,2,169,1,133,250,164,251
652 DATA192,1,40,6,8,155,24,136,200,250
653 DATA2,2,200,165,251,240,3
654 DATA25,240,155,165,251,164,2
655 DATA253,2,200,165,252,140,8
656 DATA173,160,200,5,200,24,144,13
657 DATA259,155,26,229,250,24,136,250
658 DATA173,16,200,37,255,141,16,200
659 DATA22,119,200,165,251,164,2
660 DATA253,1,200,96
661 DATA23,119,200,165,251,41,7,133,2
662 DATA219,1,125,255,164,251,162
663 DATA240,6,6,200,24,136,200,250
664 DATA259,253,56,229,250,24,136,25
665 DATA23,119,200,165,251,41,1,201
666 DATA240,8,173,21,200,5,235,24
667 DATA144,5,173,21,200,27,73
668 DATA141,31,200,32,119,200,165,251
669 DATA1,1,201,1,240,8,173,25,200
670 DATA25,253,24,144,3,173,25,200,37,73
671 DATA141,36,200,32,119,200,165,251
672 DATA164,2,153,20,200,32,119,200
673 DATA165,251,141,37,200,32,119,200

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680 DATA165,251,141,38,200,32,119,200
681 DATA165,251,41,1,200,1,240,8
682 DATA173,25,200,5,235,24,144,5
683 DATA173,20,200,27,73,141,20,200
684 DATA23,119,200,165,251,41,1,201
685 DATA240,8,173,23,200,5,235,24
686 DATA144,36,173,23,200,37,73
687 DATA141,23,200,32,119,200,165,251
688 DATA1,1,201,1,240,8,173,27,200
689 DATA19,250,24,144,5,173,27,200
690 DATA27,73,141,27,200,32,119,200
691 DATA253,251,164,2,153,240,7,36
692 DATA22,119,200,165,251,41,3,201,3
693 DATA200,1,96,160,152,140,16,163
694 DATA24,165,7,24,136,200,149,160
695 DATA22,2,2,119,200,165,251,9,1
696 DATA133,255,41,224,164,2,153,4,232
697 DATA19,15,153,5,213,32,119,200
698 DATA253,251,43,15,16,24,10,24,10,24
699 DATA20,24,164,2,153,4,213,32,8,200
700 DATA159,253,240,1,96,163,25
701 DATA200,251,165,251,56,233,12
702 DATA173,244,5,4,165,251,18,24,160
703 DATA20,40,307,153,19,145,43,207
704 DATA133,73,32,119,200,165,251
705 DATA14,7,133,61,169,7,56,225,61
706 DATA24,160,201,240,11,165,80
707 DATA4,100,102,73,24,106,200,240
708 DATA173,60,3,2,160,163,251,140,2
709 DATA16,160,160,160,160,160
710 DATA165,251,24,42,30,42,24,42
711 DATA24,2,24,164,2,133,22,207
712 DATA165,12,150,24,207,163,1
713 DATA153,20,207,163,73,155,131
714 DATA165,60,153,1,211,165,251
715 DATA153,4,212,36
716 DATA22,119,200,165,251,41,18
717 DATA141,24,211,96
718 DATA22,119,200,165,251,56,233,40

```

```

719 DATA144,4,24,70,240,150,165,251,141,70,2
720 DATA22,119,200,165,251,56,233,20
721 DATA173,207,165,251,141,71,3,25,119,200
722 DATA165,251,141,72,3,32,119,200,165,251

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1100 DATA1,1,141,72,3,167,251,43,2
1101 DATA1,41,74,3,201,340,10,173,71,3
1102 DATA201,34,201,1,72,240,129
1103 DATA32,8,200,165,251,24,43,36,252
1104 DATA24,42,36,253,14,43,36,252,24
1105 DATA120,251,165,252,24,165,200,24
1106 DATA133,252,160,4,133,43,173,70,5
1107 DATA173,71,6,162,140,11,24
1108 DATA189,40,144,3,24,238,61,124
1109 DATA162,245,133,30,175,73,8,240,5
1110 DATA165,24,24,205,32,24,133,41
1111 DATA169,133,254,173,70,2,24,42
1112 DATA254,24,42,16,224,24,42,36,254
1113 DATA24,172,71,2,192,1,40,19,24
1114 DATA165,64,144,3,24,238,61,24
1115 DATA20,254,136,200,140,165,253
1116 DATA173,71,3,200,5,165,254,24
1117 DATA200,32,24,144,5,165,254,24
1118 DATA165,64,24,133,254,173,14,220
1119 DATA24,254,141,14,220,162,1,41,251
1120 DATA1,1,160,173,74,3,205,23
1121 DATA173,72,3,140,164,173,233,140,253
1122 DATA20,120,6,200,14,165,16,9,4

```


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How long will you survive on Moonbase?

Your skill as commander of a moonbase is called upon in Gary Burrows' strategy game for either model of the Spectrum

How it works

50-100 oxygen left
100-140 decrease in supplies each year
100-100 screen display
500-100 oxygen
150-100 food
500-100 water
700-600 minerals
400-400 minerals
400-500 money
600-800 stars each
500-600 end of game

You'll need to check carefully when you play Moonbase IX, my strategy game for older models of the Spectrum. You play the part of the



```

100-100 oxygen left
100-140 decrease in supplies each year
100-100 screen display
500-100 oxygen
150-100 food
500-100 water
700-600 minerals
400-400 minerals
400-500 money
600-800 stars each
500-600 end of game

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500-100 oxygen
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```

100-100 oxygen left
100-140 decrease in supplies each year
100-100 screen display
500-100 oxygen
150-100 food
500-100 water
700-600 minerals
400-400 minerals
400-500 money
600-800 stars each
500-600 end of game

You'll need to check carefully when you play Moonbase IX, my strategy game for older models of the Spectrum. You play the part of the

```

Needs no conversion

Moonbase will run on the MSX 2200 after removing Spectrum-only commands such as INK, PAPER and BORDER. It should also work on most other home computers with the minimum of changes.

commander of a space base and you must keep the base operational for as long as possible, which means ensuring you have enough oxygen, food, water, minerals and money.

Try to keep the base running for as many years as possible.

The program can be made easier or harder by changing the random values of a throughout.

Variables

a input variable
n random variable
o oxygen level
f food supply
w water supply
y year
p population
m minerals
m money
e minerals



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As for the Commodore 64, but now available for the 48K Spectrum, Texas TI99/4A and Dragon. **£5.50**

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GAMES AND UTILITIES

JACKPOT

This is it, the ultimate Fruit Machine for the VIC with reels, hold and repeat 100% machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour." In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty. "Home Computing Weekly No. 20 19/7/83". **£5.50**

KWAZY KWAZS

Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics from the new and challenging game from the author of Jackpot. 100% machine code, joystick or keyboard control. **£5.50**

PA-MANIA

Choose your own game from the following options — difficulty 1-3 speed 1-3, size of maze 1-3, visible or invisible maze, drill or moving power pills, define your own key controls, any combination, if that is your type of game, then this is the one for you, for the 32K expand VIC. **£5.50**

BUGSY (Joystick Only)

This is a Minefield with a difference as you step on the mines whilst collecting purple boxes which give you both time and points, they disappear from beneath your feet. **DO NOT DESPAIR!** "BUGSY" will instantly replace the stones but avoid bumping into him or its sudden death! An original, competitive and challenging game. **£5.50**

MINI-ROULETTE — PONTOON — Hi-LOW

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DATABASE — create your own files and records on tape. **£7.50**

SUPER BANK MANAGER — A full feature version any memory size, but needs 32K expansion. **£7.50**

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JACKPOT 64

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A game for up to four players, can you lead the party of your choice and win the general election, you rear the 60 constituencies (avoid buying votes, when you can, just fix the real thing), this must be one of the first board type games specially written for the computer. Why play on your own, have fun with your family and friends playing WESTMINSTER. **£5.50**

RED ALERT

A game for 1-4 players, with sound and graphics. Make money as customs, prevent robbery, hide from the police, hire secret agents, (some of whom can be treacherous), negotiate for weapons, find and attack the secret rocket base to launch the missile, and watch the havoc and destruction caused. There's no turning back from "RED ALERT". **£5.50**

WHISKEY DEALER

A game for two to twenty players, become a tycoon of the illicit trade, you must obtain garbancos, forms and papers to produce cars for sale. Form syndicates, buy and exchange parts, buy dealerships, but be careful, you may become bankrupt and have to liquidate, find out what you are made of, have you got what it takes to become a WHISKEY DEALER. **£5.50**

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DEALER ENQUIRIES WELCOME



Space gets crowded as you fight off the invaders

Unlike most shoot-'em-up games written in BASIC, my Space Debris game is fast and addictive and has some original features which could only be achieved on the BBC micro.

The programming is made for the model B with operating system 1. I used overlays 1.1K and require a pair of joysticks.

You control a space ship at the bottom of the screen and have to shoot the approaching invaders with your laser beam.

When the invaders are nearer it may just drop a bit off or the resulting explosion may leave some debris behind — hence the name of the game.

How it works

10-200 set up variables, display instructions.

110-130 set up sound envelope.

140-148 set up user defined graphics for alien.

410 choose next alien.

700 check the explosion if alien hit.

100-500 choose next alien after you have been playing for a while. There is the score you score awarded at the game point on.

710-720 ship engine.

800-790 joystick control routines.

780-800 PROCEDURE to draw alien on screen.

810-840 PROCEDURE to fire laser.

1070-1080 explosion sub-routine for alien hit.

1090-1100 score display and drawing.

1110-1120 joystick options.

1130-1140 joystick options.

1150-1160 ship explosion.

1170-1180 end, and of game.

PROCEDURE, main ship.

1000-1010 error trap—BASIC.

printed if you keep getting this type 1. Then REPORT.

PRINT END will tell you about the error that was.

score on PAGE 4-1000.

The features make the game difficult because you cannot rely on a single hit to destroy an invader, which is more real to life than if you hit a wing tip and the entire spaceship explodes.

The waves build up with different multi-coloured invaders appearing along with the previous waves, so after a while the screen gets pretty full.

If you manage to survive the first five waves you will find the sixth wave is very different.

First of all the screen changes colour — making some of the invaders difficult to see — and large solid triangles appear.

New Features make Space Debris a challenging game.
Kevin Boyd wrote the program for the BBC model B micro with two joysticks

```

10 REM *****
20 REM *****
30 REM *****
40 REM *****
50 REM *****
60 REM *****
70 REM *****
80 REM *****
90 REM *****
100 REM *****
110 REM *****
120 REM *****
130 REM *****
140 REM *****
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180 REM *****
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200 REM *****
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460 REM *****
470 REM *****
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500 REM *****
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680 REM *****
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700 REM *****
710 REM *****
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730 REM *****
740 REM *****
750 REM *****
760 REM *****
770 REM *****
780 REM *****
790 REM *****
800 REM *****
810 REM *****
820 REM *****
830 REM *****
840 REM *****
850 REM *****
860 REM *****
870 REM *****
880 REM *****
890 REM *****
900 REM *****
910 REM *****
920 REM *****
930 REM *****
940 REM *****
950 REM *****
960 REM *****
970 REM *****
980 REM *****
990 REM *****
1000 REM *****

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1000 REM *****
1010 REM *****
1020 REM *****
1030 REM *****
1040 REM *****
1050 REM *****
1060 REM *****
1070 REM *****
1080 REM *****
1090 REM *****
1100 REM *****
1110 REM *****
1120 REM *****
1130 REM *****
1140 REM *****
1150 REM *****
1160 REM *****
1170 REM *****
1180 REM *****
1190 REM *****
1200 REM *****
1210 REM *****
1220 REM *****
1230 REM *****
1240 REM *****
1250 REM *****
1260 REM *****
1270 REM *****
1280 REM *****
1290 REM *****
1300 REM *****
1310 REM *****
1320 REM *****
1330 REM *****
1340 REM *****
1350 REM *****
1360 REM *****
1370 REM *****
1380 REM *****
1390 REM *****
1400 REM *****
1410 REM *****
1420 REM *****
1430 REM *****
1440 REM *****
1450 REM *****
1460 REM *****
1470 REM *****
1480 REM *****
1490 REM *****
1500 REM *****
1510 REM *****
1520 REM *****
1530 REM *****
1540 REM *****
1550 REM *****
1560 REM *****
1570 REM *****
1580 REM *****
1590 REM *****
1600 REM *****
1610 REM *****
1620 REM *****
1630 REM *****
1640 REM *****
1650 REM *****
1660 REM *****
1670 REM *****
1680 REM *****
1690 REM *****
1700 REM *****
1710 REM *****
1720 REM *****
1730 REM *****
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1910 REM *****
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1930 REM *****
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1960 REM *****
1970 REM *****
1980 REM *****
1990 REM *****
2000 REM *****

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2000 REM *****
2010 REM *****
2020 REM *****
2030 REM *****
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2050 REM *****
2060 REM *****
2070 REM *****
2080 REM *****
2090 REM *****
2100 REM *****
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3000 REM *****

```

You can dodge or shoot at the triangles but you will only be able to take chips out of them. There are worth 100 points each.

The screen will be a nightmare on the main.

Two triangles go in form a V-shaped canyon. Of course, you will always tend for the thinnest part of the canyon to shoot your way through, but inside the canyon are two partially passed flashing black and white stars. If you hit them you score 1,000 points.

You start off with three lives and you lose extra with every 1,000 points scored.

Your score and the number of lives left are displayed each time you lose a ship.

An elaborate three-level sound effect will sound when an alien hits a gun.

Two methods of controlling your craft are given.

■ **Absolute Control** moves the ship relative to the position of the joystick and needs delicate control. It means that if the joystick is under the left the ship will be to the left of the screen and as it is in the middle there where your ship will be, and so on.

■ **Deviation Control** moves the ship in the direction you point the joystick. If the stick points left the ship will move to the left and the same for the right. But if the stick is in the middle the ship will not move.

Both methods have their advantages and disadvantages — you'll have to experiment to see which you prefer.

To change your method of control press ESCAPE and then you can choose your method or end the game.

By the way, my high score is 7,100. See if you can beat it.



Star rated for study

Our experts evaluate the latest educational software. Find out if these packages live up to their claims

a, b, c... Lift Off! Spectrum £7.95

Longman, Longman House, Harlow MA, Essex. Ages 5-10. 280.
A reading and language development game designed as an early starter in the alphabet. It will also help with the names and sounds of letters, as well as using words for picture and word-recognition.

After an over-the-top loading sequence which includes a cartoon character, a computer Longman's Manuscript logo and a display screen with the first five letters, the game will appear and the letters will appear and the letters will appear.

After an over-the-top loading sequence which includes a cartoon character, a computer Longman's Manuscript logo and a display screen with the first five letters, the game will appear and the letters will appear and the letters will appear.

A good old program for fun and early school years will work the same. It's a good old program for fun and early school years will work the same. It's a good old program for fun and early school years will work the same.

★★★★★

Fractions 1 48K Spectrum £5.95

Remedy, The Woodlands, Minnesota, Wisconsin.

A reading program for children that uses letters and numbers to teach the alphabet. It will also help with the names and sounds of letters, as well as using words for picture and word-recognition.

After an over-the-top loading sequence which includes a cartoon character, a computer Longman's Manuscript logo and a display screen with the first five letters, the game will appear and the letters will appear and the letters will appear.

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★★★★★

Clever Clogs — Partytime 48K Spectrum £5.95

Comcast, Tandy, PO Box 1, West, Cambridge MA.

A program for children to play with. It's a good old program for fun and early school years will work the same. It's a good old program for fun and early school years will work the same.

A good old program for fun and early school years will work the same. It's a good old program for fun and early school years will work the same. It's a good old program for fun and early school years will work the same.

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★★★★★

Sheepdog 48K Spectrum £5.95

Longman, Longman House, Harlow MA, Essex. Ages 5-10. 280.

A reading program for children that uses letters and numbers to teach the alphabet. It will also help with the names and sounds of letters, as well as using words for picture and word-recognition.

After an over-the-top loading sequence which includes a cartoon character, a computer Longman's Manuscript logo and a display screen with the first five letters, the game will appear and the letters will appear and the letters will appear.

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★★★★★

Speech Marks 48K Spectrum £7.95

Remedy, The Woodlands, Minnesota, Wisconsin.

A reading program for children that uses letters and numbers to teach the alphabet. It will also help with the names and sounds of letters, as well as using words for picture and word-recognition.

After an over-the-top loading sequence which includes a cartoon character, a computer Longman's Manuscript logo and a display screen with the first five letters, the game will appear and the letters will appear and the letters will appear.

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★★★★★

LETTERS

Scheduling by the TI

The Big Cynicism of Underhill is dispelled by T's withdrawal from the home computer market. It seems as though he has deflected attention by inventing every year's must-have the best and ignoring any evidence of its obsolescence.

I purchased our family VCRs at Christmas when the price usually came down to 120. Early in the year through the Consumer Awareness Fund Magazine started out a review of Home Computers. Two computers came out as best value for money in all applications tested. These were the Atari 400 and Texas TI 99-4A.

The keyboard style, ability to accept commands and do very sophisticated things in my mind the first was the only computer to go for. Model 1 got the rest of my family here, then, developed and by comparison I find the Spectrum. Cost doesn't go of the world wide now cost.

While producers of the 90s have no doubt there are literally hundreds of games and programs available from the many software houses and the libraries throughout the country that of whom advertising in HCN is address, of course, HCN usually prints its full-time weekly print program, the transference of which is a complete and well-organized system.

Phosphorus is still fairly scarce globally, even though there should not have been any shortages.

While I agree with Big that the price of the plant must fall to 1/4 or so, it's already available for under 1/80 locally. The purplish will also come down in price as the supplier settles on the most stock to get. Spruce Synchroton was 1/10.

Being unemployed, I can appreciate his difficulty in obtaining a loan today. However, if it took longer as usual, it would mean that the job was not being kept as regular contact with the modern industry as the traditional programs require.

I am sure the school board was surprised as the help and guidance available through each group and I would suggest that such contact should prove most beneficial to expanding the students' horizons.

Within 1 year, a multipoint study across Africa and in the USA where family history was taken, a common allele (G) was

Send your letter to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address



Keywords: *work engagement, turnover, turnover intention, organizational commitment, organizational citizenship behavior*

I agree that perhaps T1's marketing was inadequate and that the competing paper is generally a fairly dated and ignored reference. However, inside our sources are the fairly clear in that we know and as much as we need to

I am convinced that anyone who will invest in a machine above the \$10,000 to \$15,000 range will find a considerable market available for software buyers who produce new and creative games.

They thought all consumers believed that as technology capabilities increased, their digital misanthropism, within five years, the nation will be mostly free of debt.

No doubt, by then, even our landy's 20-40 will have become yet another piece of junk. Admittedly, there will still continue to be a lot of enjoyment in using it.

On a separate matter, I find MSN's software to even install itself because a reader only to October 1999, there are already many people in online defense that I have heard.

Maybe I suggest a survey of reviews for the first year or so, when they say 1990 isn't too early for T1-990's but the other hand-computers also? I am sure many other students would appreciate this.

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Journal of Internal Medicine 255: 103–110

The prices are averages of 12 different companies in each — when a company's price is at least 10% above the 12 others, it's called an above-price outlier. The same goes for anything else that's classified by company. The query returned in each case would be the price in the outlier.

For most engines, Cap-
stone's strategy was not
just gradual, as it always
had been, but faster.

improvements, a quarterly rolled Forward Reference gives regional averages of the last 12 months from 1977 and more within a 12-month period.

Each entry specification and the actual text is delivered to American computer's, which copy and store records, and is also available to their users.

High-score secrets 1

[illegible]

The system method is in the `Integer` class. It just prints the spin number and the spin along the z-axis in parentheses. This can, however, become a little tedious:

Another method is to shoot the flycatcher near, or on, the post but make sure the bird is not over the space you'd like to use. The property and your space don't have anything to do with the eagle since the eagle didn't choose you; you will find that out later. How many times you are killed, you will see and the game rules you represent.

city found evidence for
aerobically high school in 10
percent group (mostly in low
down side, lower, higher
and low).

Finally, one rethink for all you light users: "What paradigm shifts the reader expects and ensure the protection the books is now added to your story?" In John S. Gardner's opinion, the reader is:

is Jeffery, Good story, the reader.

High-score secrets 3

Before reading the *Washington Post* and I thought I would not go to get a good name on the Feb. 20's. But have thought to be someone. I will

The third variable in "speed" was "time" meaning that the process took good faster and the cost almost always dropped as well, leaving you with the choice

If you fix it so that you can't play games on the "special" clock, when you start a new match, you will still go that route. Just speed although you will be longer on a speed run. This results in a very slight increase, in your learning the rate spent is less balanced, you

This method is based on one step, but goes off in both directions, as frequently it is not always possible to find the "two-point" source. (Source: G. A. Faget, Uckfield, East Sussex.)

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Widows Revenge £8.99

Babbie Bus, 47 High St.,
Dunstable, Beds LU6 1EX

The cartoon card sort game simply "blows everything that comes and everything that does not." That's good advice because this is a fast moving top-toy game.

Once the game is loaded there's a screen of instructions and then a choice. You can select two players and play four matches between them after a test of a left. This makes the game more competitive.

The "play" is reasonably original. You can move around the last row of the screen using the joystick.

Black birds standing across the middle and the top of you, if you hit them they become eggs, for the eggs and they turn into regular birds. You can also make birds into the screen a largeish work moving birds and white and blue eggs.

Occasionally the Black Widow spider appears, and you can try to kill it. He'll and you get a mystery score. While all this is going on an egg laying volume is flying about. Definitely something to be avoided.

I enjoyed this game. The graphics were good and the game is quite a bit of fun. L.C.

instructions	70%
playability	80%
graphics	70%
value for money	70%



More for your 64



Jumping Jack £8.95

Literature, 178 Dunstable,
Mansfield Rd LU6 1EX

This game will appeal to those who enjoy jumping. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

You have to maintain a small group of four and you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

Number of difficulties are getting the lady (the screen includes a test). You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The graphics are full colour and on a colour TV are very good.

overall. On a standard screen some shades of grey. A special test is included. This is a test. The game is very playable although not good at all.

Version of this game (BBC) will recognize the background. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The game allows you to control some of the screen. A small group of four and you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

As a final note, you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The graphics are full colour and on a colour TV are very good.



Face Ache £5

Commodore, 475 Alton Ave.,
Brighton, BN1 3AB

This game is very likely to appeal to very young children. The idea is to play the game. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The game allows you to control some of the screen. A small group of four and you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

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The graphics are full colour and on a colour TV are very good.



When the game is loaded, the screen will show a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

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The graphics are full colour and on a colour TV are very good.

The graphics are full colour and on a colour TV are very good.



Kick-Off £8.99

Babbie Bus, 47 High St.,
Dunstable, Beds LU6 1EX

Quite a good attempt at simulating the table soccer game that involves football.

The game is a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The game allows you to control some of the screen. A small group of four and you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

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The graphics are full colour and on a colour TV are very good.

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Gridrop £8.95

Literature, 178 Dunstable,
Mansfield Rd LU6 1EX

Based on what seems to be an original theme, the idea of Gridrop is to go to each of the levels before they explode. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

The game allows you to control some of the screen. A small group of four and you can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

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The graphics are full colour and on a colour TV are very good.



with a shell and 1000 bones or more in the bank.

The graphics are quite good. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test. You can play 10 games into one of the four or the other side includes a test.

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Top Ten programs for the Dragon

1	Dragonmaster	Cablessoft (-)
2	Cave Fighter	Cablessoft (-)
3	Cuthbert in the Jungle	Microdeal (-)
4	ESM	Softtek (-)
5	Skramble	Microdeal (-)
6	King of Diamonds	Wintereoft (7)
7	Progger	Microdeal (-)
8	Space Fighter	Microdeal (-)
9	Pinball	Microdeal (-)
10	Dragon Hawk	Microdeal (-)

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Gridrunner	Llansoft (3)
3	Wizard and the Princess	M.House (5)
4	Crazy Kong	Interceptor (-)
5	Abductor	Llansoft (-)
6	Golf	Audiogenic (-)
7	Plague/ Alien Demon	E-Tel (10)
8	Junior Maths and engine shed	Comodore (-)
9	Special Pack 11	Comodore (-)
10	Grandmaster Chess	Audiogenic (-)

Top Ten programs for the Commodore 64

1	Hover Bover	Llansoft (9)
2	Grandmaster	Audiogenic (-)
3	Matrix	Llansoft (-)
4	Gridrunner 64	Llansoft (10)
5	Introduction to Basic	Comodore (6)
6	Attack of the Mutant Camels	Llansoft (7)
7	Arcadia	Imagine (-)
8	Goodness	Beyond (-)
9	Progger	Interceptor (1)
10	Water Mania	Audiogenic (4)

Top Ten programs for the Spectrum

1	Atic Atac	Ultimate (1)
2	Jetpac	Ultimate (9)
3	Pyramid	Fantasy (3)
4	Kong	Coast (-)
5	Int Attack	Quicksilver (5)
6	Penetrator	M.House (6)
7	Alchemist	Imagine (4)
8	Lunar Jetman	Ultimate (8)
9	Pool	ODS (8)
10	Warrior Attack	Garrell (-)

BEST SELLERS

Top 30

1	Hunchback	Coast	Spectrum (5)
2	Manic Miner	Bag-Byte/	Spectrum (1)
3	Warrior Attack	Software Projects	
4	Lunar Jetman	Durrell	Spectrum (15)
5	Jetpac	Ultimate	Spectrum (8)
6	The Hobbit	M.House	Spectrum (2)
7	20 And Attack	Quicksilver	Spectrum (6)
8	Kong	Coast	Spectrum (7)
9	Beowulf	Imagine	Spectrum (9)
10	Falcon Patrol	Virgin	GM 64 (13)
11	Penetrator	M.House	Spectrum (-)
12	The Hobbit	M.House	GM 64 (10)
13	Atic Atac	Ultimate	Spectrum (19)
14	Valhalla	Legend	Spectrum (3)
15	Marooned	Palco/	
	Sailing	M.House	GM 64 (14)
16	Cuthbert in the Jungle	Microdeal	Dragon (18)
17	Overgrown Frog	Palco	Spectrum (26)
18	The King	Microdeal	Dragon (17)
19	Bugger Ban	Coast	Spectrum (-)
20	Chuckle Egg	A&F	Spectrum (28)
21	Arcadia	Imagine	VIC-20 (-)
22	Mini-King	Airlog	VIC-20 (-)
23	Hunchback	Superior	BBC (12)
24	Hover Bover	Llansoft	GM 64 (-)
25	Jetpac	Ultimate	VIC-20 (29)
26	Screwyler	Solar	VIC-20 (-)
27	Mixed Out	Quicksilver	BBC (-)
28	Crazy Kong	Interceptor	GM 64 (-)
29	Two Kingdoms		
	Valley	Bag-Byte	VIC-20 (30)
30	Smacker	Vision	VIC-20 (-)

Compiled by PCS Distribution (0224 231211) and
distributed by the Computer Trade Association.
Check the retail sales in individual outlets in the UK
and Northern Ireland.

Top Ten programs for the Z80

1	Flight Simulation	Stclair (-)
2	Football	Addictive (-)
	Warrior	PBS (3)
3	Crazy Kong	Stclair (-)
4	Geography	Stclair (-)
5	Maths	Stclair (-)
6	History	PBS (-)
7	Hopper	Stclair (-)
8	21 Forth	Stclair (-)
9	English Lit 1	Bag-Byte (-)
10	21 Tebex	

TI-99/4A PROGRAM

```

0000 CALL MATHS P1=1 P2=0 (14)
0001 FOR I=1 TO 100
0002 NEXT I
0003 PRINT
0004 PRINT "*****"
0005 CALL MATHS P1=1 P2=1 (15)
0006 PRINT
0007 CALL MATHS P1=1 P2=2 (16)
0008 PRINT
0009 CALL MATHS P1=1 P2=3 (17)
0010 PRINT
0011 CALL MATHS P1=1 P2=4 (18)
0012 PRINT
0013 CALL MATHS P1=1 P2=5 (19)
0014 PRINT
0015 CALL MATHS P1=1 P2=6 (20)
0016 PRINT
0017 CALL MATHS P1=1 P2=7 (21)
0018 PRINT
0019 CALL MATHS P1=1 P2=8 (22)
0020 PRINT
0021 CALL MATHS P1=1 P2=9 (23)
0022 PRINT
0023 CALL MATHS P1=1 P2=10 (24)
0024 PRINT
0025 CALL MATHS P1=1 P2=11 (25)
0026 PRINT
0027 CALL MATHS P1=1 P2=12 (26)
0028 PRINT
0029 CALL MATHS P1=1 P2=13 (27)
0030 PRINT
0031 CALL MATHS P1=1 P2=14 (28)
0032 PRINT
0033 CALL MATHS P1=1 P2=15 (29)
0034 PRINT
0035 CALL MATHS P1=1 P2=16 (30)
0036 PRINT
0037 CALL MATHS P1=1 P2=17 (31)
0038 PRINT
0039 CALL MATHS P1=1 P2=18 (32)
0040 PRINT
0041 CALL MATHS P1=1 P2=19 (33)
0042 PRINT
0043 CALL MATHS P1=1 P2=20 (34)
0044 PRINT
0045 CALL MATHS P1=1 P2=21 (35)
0046 PRINT
0047 CALL MATHS P1=1 P2=22 (36)
0048 PRINT
0049 CALL MATHS P1=1 P2=23 (37)
0050 PRINT
0051 CALL MATHS P1=1 P2=24 (38)
0052 PRINT
0053 CALL MATHS P1=1 P2=25 (39)
0054 PRINT
0055 CALL MATHS P1=1 P2=26 (40)
0056 PRINT
0057 CALL MATHS P1=1 P2=27 (41)
0058 PRINT
0059 CALL MATHS P1=1 P2=28 (42)
0060 PRINT
0061 CALL MATHS P1=1 P2=29 (43)
0062 PRINT
0063 CALL MATHS P1=1 P2=30 (44)
0064 PRINT
0065 CALL MATHS P1=1 P2=31 (45)
0066 PRINT
0067 CALL MATHS P1=1 P2=32 (46)
0068 PRINT
0069 CALL MATHS P1=1 P2=33 (47)
0070 PRINT
0071 CALL MATHS P1=1 P2=34 (48)
0072 PRINT
0073 CALL MATHS P1=1 P2=35 (49)
0074 PRINT
0075 CALL MATHS P1=1 P2=36 (50)
0076 PRINT
0077 CALL MATHS P1=1 P2=37 (51)
0078 PRINT
0079 CALL MATHS P1=1 P2=38 (52)
0080 PRINT
0081 CALL MATHS P1=1 P2=39 (53)
0082 PRINT
0083 CALL MATHS P1=1 P2=40 (54)
0084 PRINT
0085 CALL MATHS P1=1 P2=41 (55)
0086 PRINT
0087 CALL MATHS P1=1 P2=42 (56)
0088 PRINT
0089 CALL MATHS P1=1 P2=43 (57)
0090 PRINT
0091 CALL MATHS P1=1 P2=44 (58)
0092 PRINT
0093 CALL MATHS P1=1 P2=45 (59)
0094 PRINT
0095 CALL MATHS P1=1 P2=46 (60)
0096 PRINT
0097 CALL MATHS P1=1 P2=47 (61)
0098 PRINT
0099 CALL MATHS P1=1 P2=48 (62)
0100 PRINT
0101 CALL MATHS P1=1 P2=49 (63)
0102 PRINT
0103 CALL MATHS P1=1 P2=50 (64)
0104 PRINT
0105 CALL MATHS P1=1 P2=51 (65)
0106 PRINT
0107 CALL MATHS P1=1 P2=52 (66)
0108 PRINT
0109 CALL MATHS P1=1 P2=53 (67)
0110 PRINT
0111 CALL MATHS P1=1 P2=54 (68)
0112 PRINT
0113 CALL MATHS P1=1 P2=55 (69)
0114 PRINT
0115 CALL MATHS P1=1 P2=56 (70)
0116 PRINT
0117 CALL MATHS P1=1 P2=57 (71)
0118 PRINT
0119 CALL MATHS P1=1 P2=58 (72)
0120 PRINT
0121 CALL MATHS P1=1 P2=59 (73)
0122 PRINT
0123 CALL MATHS P1=1 P2=60 (74)
0124 PRINT
0125 CALL MATHS P1=1 P2=61 (75)
0126 PRINT
0127 CALL MATHS P1=1 P2=62 (76)
0128 PRINT
0129 CALL MATHS P1=1 P2=63 (77)
0130 PRINT
0131 CALL MATHS P1=1 P2=64 (78)
0132 PRINT
0133 CALL MATHS P1=1 P2=65 (79)
0134 PRINT
0135 CALL MATHS P1=1 P2=66 (80)
0136 PRINT
0137 CALL MATHS P1=1 P2=67 (81)
0138 PRINT
0139 CALL MATHS P1=1 P2=68 (82)
0140 PRINT
0141 CALL MATHS P1=1 P2=69 (83)
0142 PRINT
0143 CALL MATHS P1=1 P2=70 (84)
0144 PRINT
0145 CALL MATHS P1=1 P2=71 (85)
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0147 CALL MATHS P1=1 P2=72 (86)
0148 PRINT
0149 CALL MATHS P1=1 P2=73 (87)
0150 PRINT
0151 CALL MATHS P1=1 P2=74 (88)
0152 PRINT
0153 CALL MATHS P1=1 P2=75 (89)
0154 PRINT
0155 CALL MATHS P1=1 P2=76 (90)
0156 PRINT
0157 CALL MATHS P1=1 P2=77 (91)
0158 PRINT
0159 CALL MATHS P1=1 P2=78 (92)
0160 PRINT
0161 CALL MATHS P1=1 P2=79 (93)
0162 PRINT
0163 CALL MATHS P1=1 P2=80 (94)
0164 PRINT
0165 CALL MATHS P1=1 P2=81 (95)
0166 PRINT
0167 CALL MATHS P1=1 P2=82 (96)
0168 PRINT
0169 CALL MATHS P1=1 P2=83 (97)
0170 PRINT
0171 CALL MATHS P1=1 P2=84 (98)
0172 PRINT
0173 CALL MATHS P1=1 P2=85 (99)
0174 PRINT
0175 CALL MATHS P1=1 P2=86 (100)
0176 PRINT
0177 CALL MATHS P1=1 P2=87 (101)
0178 PRINT
0179 CALL MATHS P1=1 P2=88 (102)
0180 PRINT
0181 CALL MATHS P1=1 P2=89 (103)
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0183 CALL MATHS P1=1 P2=90 (104)
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0185 CALL MATHS P1=1 P2=91 (105)
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0187 CALL MATHS P1=1 P2=92 (106)
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0189 CALL MATHS P1=1 P2=93 (107)
0190 PRINT
0191 CALL MATHS P1=1 P2=94 (108)
0192 PRINT
0193 CALL MATHS P1=1 P2=95 (109)
0194 PRINT
0195 CALL MATHS P1=1 P2=96 (110)
0196 PRINT
0197 CALL MATHS P1=1 P2=97 (111)
0198 PRINT
0199 CALL MATHS P1=1 P2=98 (112)
0200 PRINT
0201 CALL MATHS P1=1 P2=99 (113)
0202 PRINT
0203 CALL MATHS P1=1 P2=100 (114)
0204 PRINT
0205 CALL MATHS P1=1 P2=101 (115)
0206 PRINT
0207 CALL MATHS P1=1 P2=102 (116)
0208 PRINT
0209 CALL MATHS P1=1 P2=103 (117)
0210 PRINT
0211 CALL MATHS P1=1 P2=104 (118)
0212 PRINT
0213 CALL MATHS P1=1 P2=105 (119)
0214 PRINT
0215 CALL MATHS P1=1 P2=106 (120)
0216 PRINT
0217 CALL MATHS P1=1 P2=107 (121)
0218 PRINT
0219 CALL MATHS P1=1 P2=108 (122)
0220 PRINT
0221 CALL MATHS P1=1 P2=109 (123)
0222 PRINT
0223 CALL MATHS P1=1 P2=110 (124)
0224 PRINT
0225 CALL MATHS P1=1 P2=111 (125)
0226 PRINT
0227 CALL MATHS P1=1 P2=112 (126)
0228 PRINT
0229 CALL MATHS P1=1 P2=113 (127)
0230 PRINT
0231 CALL MATHS P1=1 P2=114 (128)
0232 PRINT
0233 CALL MATHS P1=1 P2=115 (129)
0234 PRINT
0235 CALL MATHS P1=1 P2=116 (130)
0236 PRINT
0237 CALL MATHS P1=1 P2=117 (131)
0238 PRINT
0239 CALL MATHS P1=1 P2=118 (132)
0240 PRINT
0241 CALL MATHS P1=1 P2=119 (133)
0242 PRINT
0243 CALL MATHS P1=1 P2=120 (134)
0244 PRINT
0245 CALL MATHS P1=1 P2=121 (135)
0246 PRINT
0247 CALL MATHS P1=1 P2=122 (136)
0248 PRINT
0249 CALL MATHS P1=1 P2=123 (137)
0250 PRINT
0251 CALL MATHS P1=1 P2=124 (138)
0252 PRINT
0253 CALL MATHS P1=1 P2=125 (139)
0254 PRINT
0255 CALL MATHS P1=1 P2=126 (140)
0256 PRINT
0257 CALL MATHS P1=1 P2=127 (141)
0258 PRINT
0259 CALL MATHS P1=1 P2=128 (142)
0260 PRINT
0261 CALL MATHS P1=1 P2=129 (143)
0262 PRINT
0263 CALL MATHS P1=1 P2=130 (144)
0264 PRINT
0265 CALL MATHS P1=1 P2=131 (145)
0266 PRINT
0267 CALL MATHS P1=1 P2=132 (146)
0268 PRINT
0269 CALL MATHS P1=1 P2=133 (147)
0270 PRINT
0271 CALL MATHS P1=1 P2=134 (148)
0272 PRINT
0273 CALL MATHS P1=1 P2=135 (149)
0274 PRINT
0275 CALL MATHS P1=1 P2=136 (150)
0276 PRINT
0277 CALL MATHS P1=1 P2=137 (151)
0278 PRINT
0279 CALL MATHS P1=1 P2=138 (152)
0280 PRINT
0281 CALL MATHS P1=1 P2=139 (153)
0282 PRINT
0283 CALL MATHS P1=1 P2=140 (154)
0284 PRINT
0285 CALL MATHS P1=1 P2=141 (155)
0286 PRINT
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 19. **REFERENCES**
 20. **APPENDIX**
 21. **NOTES**
 22. **ACKNOWLEDGMENTS**

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